Missouri Cooperative Conservation Efforts in the Mississippi River Basin
Cypress Ditch

Description of the watershed
This 99,700 acre sub-watershed of the Lower St. Francis River Basin is located in western Stoddard County, Missouri. Runoff from this watershed drains into the lower St. Francis River through Cypress Ditch. The St. Francis River is a direct tributary of the Mississippi River. The watershed consists of 80,000 acres of cropland of which 60,000 acres are irrigated. An upland area consisting of 23,181 acres located along Crowley's Ridge is used for non-irrigated cropland, pasture and hayland. The silt loam and clay soils prevalent in the sub-watershed limit the amount of irrigation water lost to deep percolation.

Resource Problems
The primary focus has been reducing agricultural nonpoint source pollution caused by pesticide and nutrient movement from the lower agricultural lands to surface streams, the St. Francis River and the alluvial aquifer. Irrigation and rain-induced runoff of water and soil particles contain undesirable and potentially harmful chemicals and fertilizers which are absorbed into the ground water. The sheer size of the watershed and the immense upland areas create a situation for transporting these infused soil particles to the underground water supplies and surface streams and rivers.

Water quality monitoring conducted by the U.S. Geological Survey found several pesticides commonly used on crops in the watershed. These pesticides include trifluralin, alachlor, propanil, cyanazine, and molinate. Inefficient designs and poor management of irrigation systems are most likely causes of these contaminations. The shallow alluvium allows infiltration of these agents into the water sources, thereby creating potential threats to water supplies for humans and wildlife.

Sedimentation and runoff from the cropland along Crowley's Ridge also impacts creeks, streams, and drainage ditches below the ridge and eventually degrades the water quality in the St. Francis River.

Partners/Participants
The Cypress Ditch AgNPS SALT (agricultural nonpoint source special area land treatment) Project Steering Committee and the Stoddard County Soil and Water Conservation District have taken the lead in solving the identified water quality concerns. An advisory committee was formed to gain additional insight into the resource problems and to identify potential assistance in addressing the problems. Mayors from three impacted municipalities were represented on this Committee. Additionally, the project partners included: USDA Natural Resources Conservation Service, U.S. Fish and Wildlife Service, USDA Farm Service Agency, Missouri Department of Natural Resources, Missouri Department of Conservation, Bootheel Resource Conservation and Development, University of Missouri Extension, SEMO Regional Water Districts, Bootheel Partnership, Ducks Unlimited, and Missouri Stream Teams.

Actions Taken
One project goal was voluntarily reducing irrigation runoff and deep percolation through improved irrigation efficiency as one accepted method of protecting and improving water quality. A key objective in achieving that goal was to improve the quality of water in Cypress Ditch so the Missouri Department of Conservation could permit surface water to flow through the Otter Slough Conservation Area wetland for additional cleansing and polishing. A second objective was applying best management practices to irrigated cropland to reduce runoff by a targeted goal of 69% or 2.4 billion gallons annually. A third objective was treating 75% (25,752 acres) of the irrigated and 20% of the area's non-irrigated cropland with water quality practices to a resource management system level to reduce runoff, deep percolation, and erosion. A second goal was to quantify the impact from the project on surface water quality by participating in Missouri Department of Natural Resource's volunteer benthic stream monitoring that

measured changes in aquatic organisms; monitoring the qualify of surface water; and developing a stronger understanding about the impacts from applying BMPs on water quality. The third goal of the project was to increase the public's awareness of the environmental and economic benefits of applying BMPs on water quality. The objectives within that goal consisted of conducting educational and information activities within the region, and measuring the costs and evaluating the benefits of applied BMPs to determine economic impacts for future projects in the region.

Primary accomplishments include: planning and implementing 440 irrigation water management plans; installing 97 surge valves, over 11 miles of crown regrades, 93 weir boxes, 6.31 miles of outside levees, 46 miles of underground pipeline, 21,000 acres of nutrient management 125 grade stabilization structures, 2487 acres of wildlife habitat, 76 acres of field borders, 9100 acres of pest management, and 18 acres of permanent vegetative cover. This special area land treatment project applied over $1.6 million of state funded best management practices in the Cypress Ditch sub-watershed.

Status

This project was approved for financial assistance from the state Parks and Soils Tax by the Missouri Soil and Water Conservation Commission in 1998. The work in this watershed concluded June 30, 2004. Participating landowners are now in an ideal position to qualify for the Conservation Security Program (CSP) in the Lower St. Francis Watershed in southeastern Missouri and northeastern Arkansas. The CSP watershed covers portions of Bollinger, Butler, Dunklin, Stoddard and Wayne counties in Missouri and portions of Clay, Craighead, Crittenden, Cross, Greene, Lee, Mississippi, Phillips, Poinsett and St. Francis counties in Arkansas.

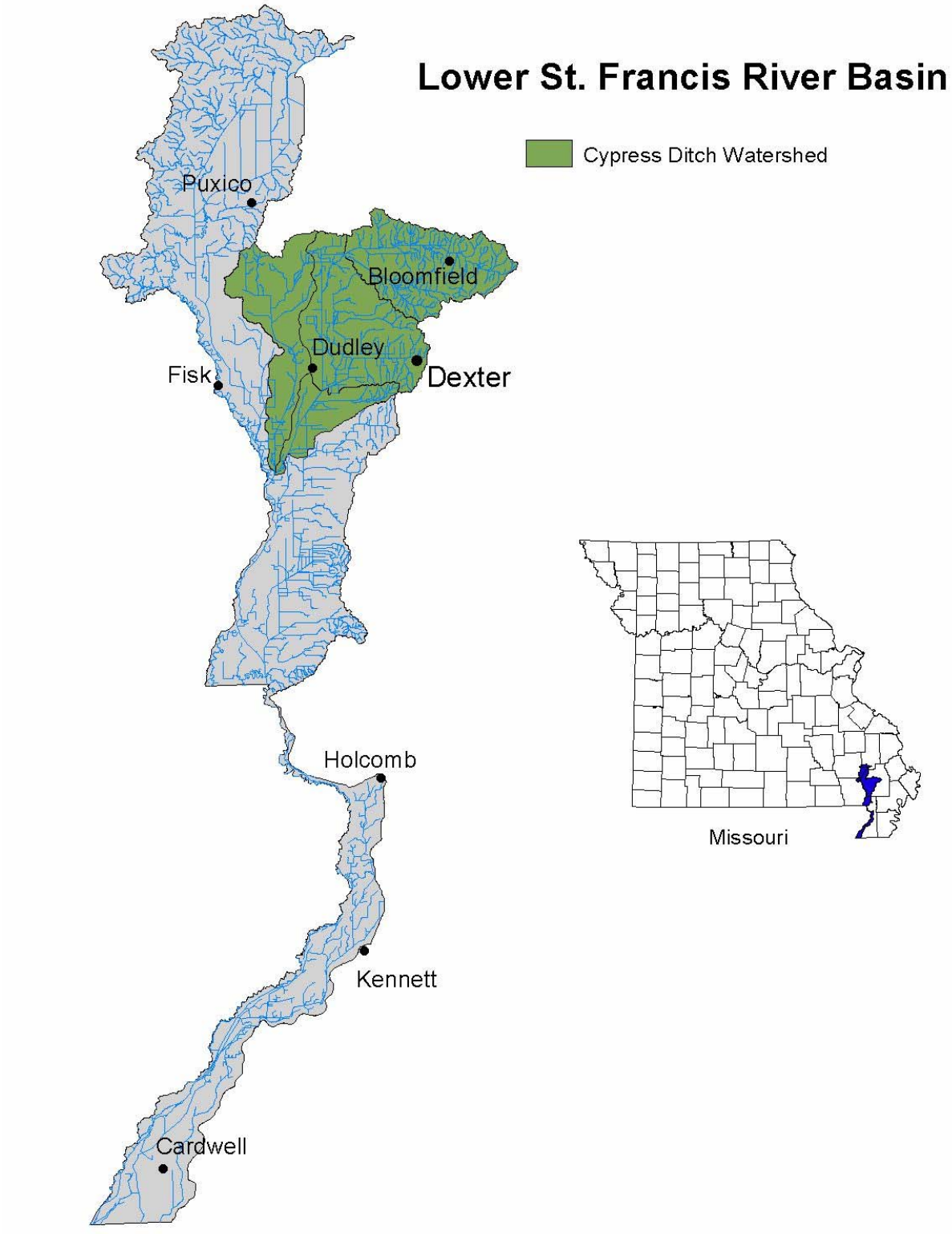
Results

The project experienced steady growth in cost-share claims for the first three years, but an economic downturn in the agriculture community hampered participation during the fourth year. The AgNPS SALT Committee and the Board of Supervisors decided in fiscal year 2002 to increase the cost-share rate from 50 to 75% to provide additional incentives. Landowner participation increased in both the fifth and sixth years of the project and remained good in the seventh and final year. Over 67% of the project goals were achieved.

The long-term impacts on water quality in streams from a reduction in nutrient and pesticide levels is unknown, but the application of irrigation and water management plans on over 21,000 acres of cropland has assuredly provided off-site benefits.

Additional Needs

Producers have expressed that the benefits of applying conservation practices outweigh the costs. Although some follow-up has occurred with producers in the watershed and the feedback has been positive, a more intense survey of the project participants may be warranted to more definitively determine how future water quality projects could be improved. Also, funding for this project focused on applying BMPs, and very little state funding was targeted towards evaluating any successes or impacts on the environment. It might be interesting to see if a higher percentage of these producers are eligible for the Conservation Security Program and what their federal CSP contract payments are in relation to producers in the same watershed who did not participate in this AgNPS SALT project. This watershed could be a classic example illustrating the immediate economic value of applying conservation.


Lower St. Francis River Basin
Cypress Ditch Watershed
Puxico
Bloomfield
Dudley
Fisk
Dexter
Holcomb
Kennett
Cardwell
Missouri